

## PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2001-053793

(43)Date of publication of application : 23.02.2001

(51)Int Cl.

H04L 12/56  
G06F 13/00

(21)Application number : 11-223763

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<NTT>

(22)Date of filing : 06.08.1999

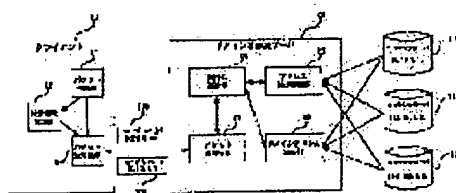
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## (54) DOMAIN NAME SOLVING METHOD AND DOMAIN NAME SOLVING SYSTEM

## (57)Abstract:

PROBLEM TO BE SOLVED: To return an IP address fitted to a client by permitting the client to contain additional information on the client in a question packet and permitting a server to select the IP address from the candidates of the plural IP addresses based on additional information.

SOLUTION: A client 10 generates a question packet 100 containing a domain name and a postal code with a packet generation part 11 and an additional information addition part 12 and transmits it to a domain name solving server 20 from a packet transmission/reception part 13. The domain name solving server 20 preserves information on the IP addresses of plural content servers 110, 111 and 112, which are managed by the same domain name, in a domain address corresponding part 22 and preserves additional information in an address addition information part 23. The domain name solving server 20 refers to the corresponding table of the question packet 100 received by a question return part 24, the domain address corresponding part 22 and the address addition information part 23 and decides the returned IP address.



## LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision]

of rejection]

[Date of requesting appeal against examiner's  
decision of rejection]

[Date of extinction of right]

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CLAIMS

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[Claim(s)]

[Claim 1] The domain name solution approach characterized by to have the step which includes the additional information as which said client specifies the client concerned in said question packet in the domain name solution approach of returning the address corresponding to the domain name by which a server is equipped with the conversion table of a domain name and an IP address, and is contained in a question packet to the question about the domain name from a client, and the step which choose the IP address to which said server was suitable for the client out of the candidate of two or more IP addresses based on said additional information

[Claim 2] In the domain name solution approach of returning the address corresponding to the domain name by which a server is equipped with the conversion table of a domain name and an IP address, and is contained in a question packet to the question about the domain name from a client The step which includes the additional information which specifies the server to which said client cannot connect the client concerned in said question packet, The domain name solution approach characterized by having the step which chooses the IP address to which said server was suitable for the client out of the candidate of two or more IP addresses based on said additional information

[Claim 3] The packet generation section in which a client generates the question packet containing a domain name, The packet-sending-and-receiving section which transmits said question packet, and it has the packet-sending-and-receiving section which receives the reply packet to a question packet, and a server receives said question packet, and transmits the reply packet to a question packet, A domain name and the domain address corresponding point which manages the conversion table of an IP address, As opposed to the question have the inquiry answerback section which opts for the IP address which answers a letter with reference to the conversion table which said question packet which received, and said domain address corresponding point manage, and concerning the domain name from a client In the domain name solution system which returns the address corresponding to the domain name contained in a question packet It has the additional information addition section which said client makes include the additional information about the client concerned in said question packet. The address additional information section in which said server manages the conversion table of the additional information about the server corresponding to an IP address and the IP address concerned, The domain name solution system characterized by having the inquiry answerback section which opts for an IP address with reference to said question packet which said server received, the conversion table which said domain address corresponding point manages, and the conversion table which said address additional information section manages further

[Claim 4] The packet generation section in which a client generates the question packet containing a domain name, The packet-sending-and-receiving section which transmits said question packet, and it has the packet-sending-and-receiving section which receives the reply packet to a question packet, and a server receives said question packet, and transmits the reply packet to a question packet, A domain name and the domain address corresponding point which manages the conversion table of an IP address, As opposed to the question have the inquiry answerback section which opts for the IP address which answers a letter with reference

to the conversion table which said question packet which received, and said domain address corresponding point manage, and concerning the domain name from a client In the domain name solution system which returns the address corresponding to the domain name contained in a question packet It has the additional information addition section which includes the additional information as which said client specifies the server which cannot connect the client concerned to said question packet in said question packet The address additional information section in which said server manages the conversion table of the additional information about the server corresponding to an IP address and the IP address concerned, The domain name solution system characterized by having the inquiry answerback section which opts for an IP address with reference to said question packet which said server received, the conversion table which said domain address corresponding point manages, and the conversion table which said address additional information section manages further.

[Claim 5] The domain name solution system according to claim 1 or 2 which is the domain address corresponding point which has a means by which said domain address corresponding point creates the conversion table of a domain name and an IP address based on the information transmitted from the client to register.

[Claim 6] The domain name solution system according to claim 3 or 4 which is the address additional information section which has a means by which said address additional information section creates the conversion table of the additional information about the server corresponding to an IP address based on the information transmitted from the client to register.

[Claim 7] The domain name solution approach according to claim 1 which is the question packet in which said question packet contains individual specific information, such as a zip code of the client to register, and a contract domain name.

[Claim 8] The domain name solution approach according to claim 2 which is the question packet in which said question packet includes the additional information about connection of the client to register.

[Claim 9] The domain name solution system according to claim 3 which is the question packet in which said question packet contains individual specific information, such as a zip code of the client to register, and a contract domain name.

[Claim 10] The domain name solution system according to claim 4 which is the question packet in which said question packet includes the additional information about connection of the client to register.

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[Translation done.]

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the domain name solution approach that a server answers the IP address corresponding to it, and a domain name solution system, from a client to a request of domain name solution.

[0002]

[Description of the Prior Art] There is Domain Name System (DNS) as a domain name solution system (a DNS & BIND revised edition, P. Albitz, C Liu collaboration, issue: O Reilly, ISDN:4-900900-42-7)

[0003] The example of the conventional domain name solution system is shown in drawing 7. A client 30 has the packet creation section 31 which generates the question packet 50 containing a domain name, and transmits the question packet 50 to the domain name solution server 40 from the packet-sending-and-receiving section 32. The domain name solution server 40 receives the question packet 50 in the packet-sending-and-receiving section 41, and analyzes it in the inquiry answerback section 42. The inquiry answerback section 42 answers a letter with reference to the question packet 50 and the domain address corresponding point 43 in the message 51 including the information about the IP address corresponding to a domain name. The domain address corresponding point 43 manages, and also has managed correspondence with the domain name of servers 60-62, and an IP address. In an actual domain name solution system, as shown in drawing 8, a client 70 may find an answer via the plurality of the domain name solution servers 71 and 72. The exchange of a message is performed in order of the question packets 73 and 74 in drawing, and the reply packets 75 and 76. If the exchange of the packet between the domain name solution server 71 in that case and 72 is shown in drawing 7, it will turn into an exchange of the same packet.

[0004]

[Problem(s) to be Solved by the Invention] however, by the conventional method of a domain name solution system. When two or more contents servers are managed by the same domain name in a domain name solution server, The reply to a question like [ in the case of being shown by "DNS & BIND" (a revised edition, P. Albitz, C. Liu collaboration, issue: O Reilly, ISDN:4-900900-42-7) ] The approach of answering a letter in order in the contents which were made carrying out and have been registered so that round robin may be carried out (round robin). The load of a contents server is supervised like JP,10-93552,A "a communication link connection type with two or more hosts with a common identifier", and JP,10-307783,A "a site access-control system and a record medium." The system which opts for the IP address which answers a letter based on the information exists.

[0005] The example of processing of the inquiry answerback section 42 in the case of JP,10-93552,A is shown in drawing 9. Moreover, the example of processing in the case of JP,10-307783,A is shown in drawing 10.

[0006] As shown in drawing 9, in JP,10-93552,A, an IP address is only distributed as sequence at a client. Moreover, as shown in drawing 10, only the load of a server is observed in JP,10-307783,A. Either of the cases has answered a letter in the IP address of a server with the

system optimal based on from what domain the client has accessed, and User Information.

[0007] The purpose of this invention is a domain name solution server's receiving the question packet from a client, and offering the domain name solution approach and domain name solution system which answer a letter in the IP address suitable for the client out of two or more answer candidates

[0008]

[Means for Solving the Problem] In order to solve the above-mentioned technical problem, the domain name solution approach of this invention In the domain name solution approach of returning the address corresponding to the domain name by which a server is equipped with the conversion table of a domain name and an IP address, and is contained in a question packet to the question about the domain name from a client It is characterized by having the step which includes the additional information as which a client specifies the client concerned in a question packet, and the step which chooses the IP address to which the server was suitable for the client out of the candidate of two or more IP addresses based on additional information.

[0009] Moreover, the domain name solution approach of this invention is characterized by having the step which includes the additional information which specifies the server to which a client cannot connect the client concerned in a question packet, and the step which chooses the IP address to which the server was suitable for the client out of the candidate of two or more IP addresses based on additional information

[0010] Furthermore, the packet generation section in which the domain name solution system of this invention generates the question packet in which a client contains a domain name, The packet-sending-and-receiving section which transmits a question packet, and it has the packet-sending-and-receiving section which receives the reply packet to a question packet, and a server receives a question packet, and transmits the reply packet to a question packet, A domain name and the domain address corresponding point which manages the conversion table of an IP address, As opposed to the question have the inquiry answerback section which opts for the IP address which answers a letter with reference to the conversion table which the question packet which received, and a domain address corresponding point manage, and concerning the domain name from a client In the domain name solution system which returns the address corresponding to the domain name contained in a question packet It has the additional information addition section which a client makes include the additional information about the client concerned in a question packet. The address additional information section in which a server manages the conversion table of the additional information about the server corresponding to an IP address and the IP address concerned, It is characterized by having the inquiry answerback section which opts for an IP address with reference to the question packet which the server received, the conversion table which a domain address corresponding point manages, and the conversion table which the address additional information section manages further.

[0011] Moreover, the domain name solution system of this invention has the additional information addition section which includes the additional information as which a client specifies the server which cannot connect the client concerned to a question packet in a question packet. The address additional information section in which a server manages the conversion table of the additional information about the server corresponding to an IP address and the IP address concerned, It is characterized by having the inquiry answerback section which opts for an IP address with reference to the question packet which the server received, the conversion table which a domain address corresponding point manages, and the conversion table which the address additional information section manages further.

[0012] Moreover, a domain address corresponding point has a means to create the conversion table of a domain name and an IP address based on the information transmitted from the client to register.

[0013] Furthermore, the address additional information section has a means to create the conversion table of the additional information about the server corresponding to an IP address based on the information transmitted from the client to register again

[0014] Moreover, question packets may be any of the additional information about the connection of individual specific information, such as a zip code of the client to register, and a contract domain name, or a client to register.

[0015] Specifically, the domain name solution system of this invention consists of a client 10, a domain name solution server 20, and contents servers 110, 111, and 112, as shown in drawing 1.

[0016] A client 10 is a client which has the packet generation section 11 which generates the question packet containing a domain name, has the additional information addition section 12 which adds the additional information about a self-client to a packet, and has the packet-sending-and-receiving section 13 which receives the reply packet [ as opposed to transmission and a question packet for the question packet 100 ] 101.

[0017] The domain name solution server 20 has the packet-sending-and-receiving section 21 which transmits the reply packet [ as opposed to reception and a question packet for the question packet 100 ] 101. The packet which had the domain address corresponding point 22 which manages the conversion table (refer to drawing 3 ) of a domain name and an IP address, and the address additional information section 23 which manages the conversion table (refer to drawing 4 ) of the additional information about an IP address, and received. It has the inquiry answerback section 24 which opts for the IP address which answers a letter with reference to the conversion table of the domain address corresponding point 22 and the address additional information section 23, and is the server which answers an IP address to the asked client.

[0018] The domain name solution system of this invention is characterized by constituting the inquiry answerback section 24 newly as the address additional information section 23 with the additional information addition section 12 at the domain name server at the client. The additional information addition section 12 adds additional information, such as a zip code, to the existing question packet. In the address additional information section 23, the conversion table of an IP address and additional information is held. It opts for the packet which received, and the IP address which answers a letter with reference to the conversion table of the domain address corresponding point 22 and the address additional information section 23 in the inquiry answerback section 24.

[0019]

[Embodiment of the Invention] Next, the gestalt of operation of this invention is explained to a detail with reference to a drawing. As 1st operation gestalt, the block diagram in which drawing 1 shows the configuration of the 1st example of this invention, drawing where drawing 3 explains the example of the conversion table of a domain name and an IP address, and drawing 4 are drawings explaining the example of the conversion table of an IP address and additional information.

[0020] According to drawing 1, the domain name solution system of the 1st example consists of a client 10, a domain name solution server 20, and contents servers 110, 111, and 112 connected to the domain name solution server 20.

[0021] The client 10 consists of the packet generation section 11 which generates the question packet containing a domain name, the additional information addition section 12 which adds the additional information about a self-client to a packet, and the packet-sending-and-receiving section 13 which receives the reply packet [ as opposed to transmission and a question packet for the question packet 100 ] 101.

[0022] The packet-sending-and-receiving section 21 to which the domain name solution server 20 transmits the reply packet [ as opposed to reception and a question packet for the question packet 100 ] 101. A domain name and the domain address corresponding point 22 which manages the conversion table (refer to drawing 3 ) of an IP address. It consists of the inquiry answerback sections 24 which opt for the address additional information section 23 which manages the conversion table (refer to drawing 4 ) of the additional information about an IP address, the packet which received, and the IP address which answers a letter with reference to the conversion table of the domain address corresponding point 22 and the address additional information section 23.

[0023] Next, actuation of the 1st example is explained. A client 10 generates a domain name called www.ntt.co.jp and the question packet 100 containing a zip code 300 by the packet generation section 11 and the additional information addition section 12, and transmits to the domain name solution server 20 from the packet-sending-and-receiving section 13.

[0024] The domain name solution server 20 saves the information about the IP address of two or more contents servers 110, 111, and 112 managed by the same domain name at the domain address corresponding point 22, and saves additional information in the address additional information section 23.

[0025] The domain name solution server 20 which received the question packet 100 in the packet-sending-and-receiving section 21 opts for the packet which received in the inquiry answerback section 24, and the IP address which answers a letter with reference to the conversion table of the domain address corresponding point 22 and the address additional information section 23.

[0026] Next, the flow chart shown in drawing 5 about processing of the inquiry answerback section 24 is used, and it is detail fake click \*\*\*\*\*

1. Refer to the domain name in a question packet, and the conversion table of a domain address corresponding point. When the domain name is not registered, a client is answered in an error message. The domain name is registered, and when a domain name and a corresponding IP address exist, it progresses to following 2. (Step 1000)

2. When the number of the IP addresses corresponding to a domain name is one, answer a client in a message including the IP address. When the number of the IP addresses corresponding to a domain name is not one, it progresses to following 3. (Step 1001)

3. When additional information is not included in a question packet, answer a letter in the one address of arbitration in a corresponding IP address. When additional information is included in the question packet, it progresses to following 4. (Step 1002)

4. When there is no IP address corresponding to the information in a question packet with reference to the conversion table of the address additional information section, answer a letter in the one address of arbitration in a corresponding IP address. When the IP address corresponding to the information in a question packet occurs, it progresses to following 5. (Step 1003)

5. Answer a client in a packet including a domain name and the IP address corresponding to additional information. (Step 1004)

In drawing 1 which shows an example 1, the message 101 including the IP address (10.10.1.1) corresponding to a zip code 300 is answered. Even when performing domain name solution through two or more domain name solution servers like drawing 8, the information to which the client added additional information is added continuously.

[0027] Next, the block diagram in which drawing 2 shows the configuration of the 2nd example of this invention, drawing where drawing 3 explains the example of the conversion table of a domain name and an IP address, and drawing 4 are drawings explaining the example of the conversion table of an IP address and additional information as 2nd operation gestalt.

[0028] According to drawing 2, the domain name solution system of the 2nd example consists of a client 10, a domain name solution server 20, and contents servers 110, 111, and 112 connected to the domain name solution server 20, and there is no different place from the 1st example.

[0029] The configuration of a client 10 and the configuration of the domain name solution server 20 do not have a different place from the 1st example, either. However, the conversion tables of the address additional information section 23 which manages the data which show the condition of saying that it is not connectable with the server of an IP address in the conversion table of the additional information about an IP address differ.

[0030] Next, actuation of the 2nd example is explained. A client 10 generates a domain name called www.ntt.co.jp and the question packet 103 containing "connection with IP address 172.30.1.1 is improper" by the packet generation section 11 and the additional information addition section 12, and transmits to the domain name solution server 20 from the packet-



sending-and-receiving section 13.

[0031] The domain name solution server 20 saves the information about the IP address of two or more contents servers 110, 111, and 112 managed by the same domain name at the domain address corresponding point 22, and saves additional information in the address additional information section 23.

[0032] The domain name solution server 20 which received the question packet 100 in the packet-sending-and-receiving section 21 opts for the packet which received in the inquiry answerback section 24, and the IP address which answers a letter with reference to the conversion table of the domain address corresponding point 22 and the address additional information section 23.

[0033] Next, the flow chart shown in drawing 6 about processing of the inquiry answerback section 24 is used, and it is detail fake click \*\*\*\*\*.

1. Refer to the domain name in a question packet, and the conversion table of a domain address corresponding point. When the domain name is not registered, a client is answered in an error message. The domain name is registered, and when a domain name and a corresponding IP address exist, it progresses to following 2. (Step 2000)

2. When the number of the IP addresses corresponding to a domain name is one, answer a client in a message including the IP address. When the number of the IP addresses corresponding to a domain name is not one, it progresses to following 3. (Step 2001)

3. When the additional information about connectability is not included in a question packet, answer a client in the message which includes the one address of arbitration in a corresponding IP address. When the additional information about connectability is included in the question packet, it progresses to following 4. (Step 2002)

4. Answer a client in a message including IP addresses other than the server which is not connectable. (Step 2003)

Moreover, in any [ of examples 1 and 2 ] case, a domain address corresponding point creates the conversion table of a domain name and an IP address based on the information transmitted from the client to register. The conversion table about the domain name and IP address which are shown in drawing 3 is an example, and a format is not limited.

[0034] Moreover, the address additional information section creates the conversion table of the additional information about the server corresponding to an IP address based on the information transmitted from the client to register. The conversion table about the IP address and additional information which are shown in drawing 4 is an example, and a format is not limited.

[0035]

[Effect of the Invention] According to this invention, the 1st effectiveness of this invention is saying that a letter can be answered in the optimal IP address to a client by performing domain name solution based on the information from a user.

[0036] When a user transmits a question packet including the information about a self-domain name by this, a user can choose a server with the nearest distance between domains in two or more servers.

[0037] Moreover, when a user transmits the information which can specify the area based on a zip code in a question packet, the server which includes the advertisement considered to be the need by a user's area by using zip code information etc. in the servers (for example, advertisement which specialized in a certain area) containing the contents from which the plurality managed by the same domain name differs can be accessed by the same domain name.

[0038] Moreover, when a user transmits the information which can specify individuals, such as Individual ID, into a question packet, a server can be distributed according to a user. For example, it is guiding to the server which is powerful and has become empty to the customer etc.

[0039] Moreover, when the data in which the condition of saying that it is not connectable with the server of a certain IP address is shown are included in a question packet and it transmits, high access of a utilization factor can be realized by getting the other IP address from a server.

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[Translation done.]